

U.S. Patent Application Serial No. **10/751,478**
Amendment filed May 25, 2006
Reply to OA dated March 7, 2006

REMARKS

Claims 1-3 and 5-7 are pending in the application. Claim 4 has been canceled.

Claim 1 has been amended by incorporating the subject matter of claim 4. The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **March 7, 2006**.

The misspelling "check" is corrected to --chuck-- on p.2, text line 22 of the specification. It is respectfully submitted that no new matter is has been added.

Claim 1 is objected to because of the following informalities:

It is suggested that in: Claim 1, line 2, delete "check" and insert --chuck--. (Office Action, p.2)

The misspelling "check" is corrected to --chuck-- as helpfully suggested by the Examiner.

Claims 1 and 2 are rejected under 35 USC 102(b) as being anticipated by US Patent No.5,717,482 to Akutsu et al. (Office Action, p.2)

Claim 1 has been amended by incorporating the subject matter of claim 4, which the Office Action admits on p.4, text lines 5-7 is not disclosed by Akutsu. Therefore it is impossible for Akutsu to anticipate claims 1 and 2 as currently amended.

It is respectfully requested that the rejection be reconsidered and withdrawn.

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Claim 3 is rejected under 35 USC 103(a) as being unpatentable over Akutsu et al. in view of US Patent No. 5,896,877 to Pirker. (Office Action, p.3)

Claim 3 is dependent on claim 1 which has been amended by incorporating the subject matter of claim 4, which the Office Action admits on p.4, text lines 5-7 is not disclosed by Akutsu. The applicants' claim 1 recites a structure whereby gas is discharged from a central nozzle, having a hole, which can move vertically in a hollow. None of the references show this because in Pirker, gas is discharged near the edge of the substrate from ring-shaped die 8 (col.2, lines 8-10). Akutsu only discloses a vacuum system (col.4, lines 30-33) which is the opposite of a gas discharge system. Thus the combination of Akutsu with Pirker cannot disclose a structure capable of gas discharge from a nozzle hole within a vertically moving center member within a chuck.

Therefore the combination of the references cannot logically make obvious the invention as now claimed. It is respectfully requested that the rejection be reconsidered and withdrawn.

Claims 4 and 5 are rejected under 35 USC 103(a) as being unpatentable over Akutsu et al. in view of US Patent No. 6,095,582 to Siniaguine et al. (Office Action, p.4)

Claim 1 has been amended by incorporating the subject matter of claim 4 because it is believed that the Siniaguine reference has been misinterpreted with regards to the matter of "non-contact."

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It is urged that the Examiner reconsider the interpretation of Siniaguine in light of the following showing:

The invention of Siniaguine is based on contact between friction pins 140 and substrate 120, therefore the reference does not disclose a “non-contact” apparatus. In fact, the invention of Siniaguine is expressly designed to overcome problems associated with non-contact devices as described in the Summary of the invention (col.1, lines 51-57):

Holders using gas flow also have problems. In such holders, the wafer is surrounded by vertical locator pins that prevent the wafer from sliding horizontally relative to the holder. The distance between the locator pins typically exceeds the average wafer size in order to accommodate slight variations in wafer sizes. *Consequently, the wafer may bump against the locator pins.* (Emphasis added)

In contrast to pure gas flow devices, the device disclosed in Siniaguine uses friction pins 140 set at a height to contact the substrate to prevent the substrate from sliding (col.1, line 61 to col.2, line 6):

In some embodiments of the present invention, the above disadvantages are reduced or eliminated as follows. One or more gas flows are generated adjacent to a wafer surface. In some embodiments, gas flows are similar to prior art vortices or Bernoulli effect gas flows, and they hold the wafer at a predetermined distance relative to the holder. *In addition, one or more members*

(e.g. pins) contact the wafer surface at which the gas flows are generated. These "friction" members (e.g., "friction" pins) exert friction forces at the wafer surface to prevent the wafer from sliding horizontally relative to the holder. If locator pins are provided around the wafer, the friction pins prevent the wafer from bumping against the locator pins. (Emphasis added)

Therefore in Siniaguine the friction pins constantly exert a force on the substrate (hence the name "friction" pin) so that the device can be used with or without locator pins.

Friction pins are described in Siniaguine as follows (col.2, lines 35-38; col.2, lines 45-49 and col.2, lines 65-67):

Friction pins 140 extend from platform 130 and contact the horizontal bottom surface of the wafer in the wafer peripheral area reserved for wafer handling...

Friction pins 140 impede the horizontal movement of the wafer.

In some embodiments, only one pin 140 is provided. In other embodiments, three or more pins are provided and placed so that the wafer is in horizontal equilibrium....

Friction pins 140 prevent the wafer from bumping against the locator pins.

(Emphasis added)

Thus the reference discloses a contact relationship between the apparatus and the substrate.

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Even during gas flow, the friction pins 140 are designed to contact the substrate as disclosed (col.4, lines 3-6; col.4, lines 13-16):

The height of friction pins 140 is set to the equilibrium distance H. Thus, the friction pins extend substantially only to the equilibrium position of the wafer. Therefore, the wafer does not sag...

In some embodiments, the friction between the pins 140 and the wafer is increased by making the pins 140 taller than the equilibrium height H. *The pins resist the wafer assuming the equilibrium position $X=H$.*

(Emphasis added)

The friction pins 140 contact the substrate even under conditions where no vacuum force is generated as explained (col.4, lines 30-35):

In some embodiments, no vacuum force is generated. Compressed gas flow creates an expelling force at the wafer surface facing the holder (e.g. near the center of the wafer) to reduce or eliminate wafer sagging. *The wafer is positioned above the holder on pins 140, and is held down by its weight.*

(Emphasis added)

Above it is explained that the weight of the substrate (not any vacuum forces) holds the substrate on the friction pins 140.

In conclusion, neither Siniaguine nor Akutsu, as admitted in the Office Action p.4, text

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lines 5-6, discloses a non-contact apparatus. Because of this lack of disclosure and teaching it is *logically impossible for the combination of references to suggest a non-contact device.*

Without more, the rejection must fail and the Examiner is urged to reconsider the rejection and withdraw it.

Claims 6 and 7 are rejected under 35 USC 103(a) as being unpatentable over Akutsu et al. in view of Siniaguine et al. as applied to claim 4 above, and further in view of US Patent Application Publication No. 2001/0052392 A1 to Nakamura et al. (Office Action, p.4)

The Nakamura reference relates only to the forks for loading and unloading substrates. Since claims 6 and 7 ultimately depend from claim 1 and Nakamura does not provide any disclosure or additional teaching which is lacking from the combination of Akutsu with Siniaguine, it is impossible for the new combination with Nakamura to suggest the invention as now claimed. As a result, it is asserted that this rejection is addressed and overcome by the amendment to claim 1 as explained above. It is respectfully requested that this rejection be reconsidered and withdrawn.

In view of the aforementioned amendments and accompanying remarks, the claims, as amended, are in condition for allowance, which action, at an early date, is requested.

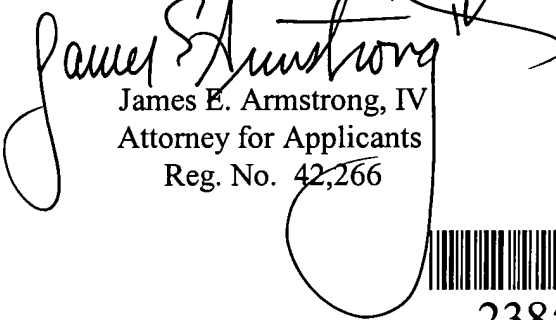
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If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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